THE COMMUNICATOR
SURREY AMATEUR RADIO CLUB

Volume II November 2009 Issue XXXIX

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Surrey Amateur Radio Club

ALWAYS MONITOR 147.36+ (110.9)
OR 443.775+ (110.9 in and out) IRLP 1463

CLUB NET @ 8:00 P.M. Tuesday 147.36+ (110.9)
CLUB MAILING ADDRESS : 239 -7156 121 St. Surrey, B.C. V3W 0J6

The next meeting of the Surrey Amateur Radio Club will be the annual Christmas Brunch December 12th at the ABC restaurant 74th and King George Hwy.
Talk in on 147.36+ (110.9) 443.775+ (110.9)

Minutes for Nov 4, 2009
SAR Club Meeting

1. The meeting was called to order at 7:30 pm Nov 4, 2009 chaired by Vice President Egon VA7EGO. 10 members were in attendance at the Surrey Fire Dept Training Center.

2. Egon reviewed the Executive meeting minutes with the club.

3. The club antenna analyzer was discussed with the members. John VA7XB made a motion that SARC purchase an analyzer for members use and a decision will be made next month after further investigation of what kind. Fred VE7MPI seconded this motion. Carried.

4. The upcoming Christmas Party was discussed. The suggested date will be the 12th of December with the 5th as a back up. John VA7XB and David VA7DKW will assist Alan VA7BIT with this.

5. The flea market was again discussed. Wayne will be unable to organize this event this year. Other plans and ideas were discussed to help fund raise rather than a flea market this year.

6. The club wants to investigate a larger Bunny hunt this year and Anton will contact Amel to see if he is able to make a presentation to the club at the January mtg.

7. At the last Exec meeting a decision was made to hold an Exec meeting or a regular basis two weeks after a regular club meeting.

8. John VA7XB updated the members that the lottery grant application was still in process. No further update is available at this time.

9. Scott VE7CNR told us the bank balance is $1340.75 as of Oct 9th, 2009.

10. A discussion around the upcoming Distracted Driver Legislation and Ham radio occurred. This issue is still ongoing and several local Ham's are working hard to ensure Ham Operators are still able to use mobile radios in their vehicles.

11. Egon then made the evening presentation on Antenna Analyzers, with both the Mini VNA and MFJ 269 being discussed.

Next Meeting will be either Dec 12th or 5th for the club Christmas Party. This will be on a Saturday at the ABC restaurant located at 74th and King George Highway. Final details will be announced.

In Memoriam Vic Medway VE7CON

Club Members may be interested to know that at the Port Kells Remembrance Day ceremonies today a beautiful wreath was laid at the cenotaph honouring SK Vic Medway VE7CON.

Doing the honours for Vic's family were his son Peter and grandson Graham. Johnny VE7JGR and myself placed our personal poppies on the wreath for a special friend.

Vic was a long-serving member of the British Merchant Marine doing great work such as ferrying men and materials across the English Channel during the Normandy landings.

Cheers! & very 73…….Bob Findler VE7EYF

Thanks Bob for sharing this with the club.—Fred

From Ken Clarke VE7BC

Hello,

The annual Santa Claus Parade in New Westminster is on Saturday, December 5. We start communications at 14:00 or
a little later depending on your assignment, the parade rolls at 16:00 and is all done within a couple hours.

I am looking for about 25 operators for this one. Positions will include the assembly area, with the judging, PA
announcers, police, first aid, BCAA, dispersal etc. Several operators will be assigned to provide communications at the

intersections and traffic barricades along the parade route. These are good spots for operators who would like to bring
their families along to enjoy the parade.

More information on the parade can be found on the Hyack Festival website at www.hyack.bc.ca.

Please help spread the word on this event by announcing it at your club meetings, on your club nets, in your newsletters,
websites, club bulletins etc. Also please forward this e-mail to anyone you think might be interested. The parade is less
than 3 weeks away. We want to fill all the positions, we will need all the help we can get!

The only requirement is a 2 metre handheld and hopefully a spare battery. New hams are always welcome. We can
certainly buddy up any brand new hams with an experienced operator.

Please let me know if you are interested. The Hyack committee very much appreciates our contribution and count on us
to provide an important service. Please mark your calendar and try to keep the date open if at all possible.

Please note my new callsign, VE7BC. (I have traded in my old call, so no longer hold VE7UQ).

Thanks in advance,

Ken Clarke
VE7BC
kenjclarke@shaw.ca
604-816-5775

Field Day 2009

Here are the results for Canadian entries in the 2009 Field Day exercise in the 2A category

- ⇒ First place in Canada VE3ZI 7542 pointes 1781 QSO's
- ⇒ Second place in Canada and First place in BC VE7RAR 4700 points 985 QSO's
- ⇒ Third place in Canada VE3RC 4304 points 1032 QSO's
- ⇒ Second Place in BC VE7PCE 2652 points 801 QSO's
- ⇒ Fifth place in Canada and third place in BC VE7SAR 2432 points 448 QSO's

Congratulations to all the SARC operators and people who made this happen.

Well done.

Breaking news

We now have an internet connection at the VHF repeater site and IRLP is one step closer to reality.

On the air code classes

Code practice is going well with Gary. VE7AS, providing the code on the VHF repeater Tuesday's after the SARC net. If you have not yet joined in give it a look as they are moving along with the code.

DX

Recently there has been a good amount of DX on the 40 meter band in the afternoon. Some DXpeditions like the group on Gahna 9G5TT. As well a station from Thailand HS0ZCY/4 has been active on 40 meters. The good news is that these stations are workable from our location as there seems to be an improvement in propagation right now. So if you can get on 40 meters in the late afternoon have a look around and don't forget to check the DX cluster on DX Summit at -
http://www.dxsummit.fi/DxSpots.aspx
This site will give you real time DX operations and is a must if you plan on working DX.

Good DX Fred VE7IO

Surrey Amateur Radio Club

SARC Christmas Party

(in lieu of regular December meeting)

Saturday December 12th
1100 – 1430

ABC Restaurant
7380 King George Highway
Surrey, BC

Cost: $20.00 per person

Menu

Bean salad and Caesar salad
Roast beef, vegetables, mashed potatoes
with Yorkshire pudding, gravy
Fruit platter, dessert squares, pumpkin and coconut cream pie
Tea, coffee

Raffle tickets: $5.00
Prizes include Icom handheld radio, dual-band VHF/UHF antenna,
gift certificates from Burnaby Radio and more !

Those wishing to attend, please contact
Al Saunders va7bit@shaw.ca or
John Brodie va7xb@rac.ca
and let one of them know the number in your party.

Aerial Adventures

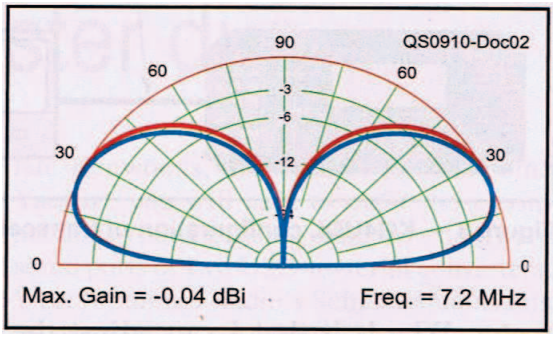
With Gary Skett, VE7AS

This article marks my 12th installation of AA and marks a year of terrific antenna projects. My next project will be a couple of "Eggbeaters" for 145 & 440 MHz. for my FT-736R satellite rig...and then next Spring maybe we'll get into making some circularly polarized yagis or helical antennas for some serious satellite work....

Recently, a friend of mine – Rick VE7WF – bought himself one of those impressive looking 43 foot self supporting multi-band verticals. It's advertised as an "all band" vertical for those who can't put up dipoles. And unless your neighbours are totally unobservant...it's not as "invisible" as some ads are stating...Oh I'm sure in some jungle-like back yards, painted in camo colours it might disappear...but it's a big shiny aluminum structure...hard not to notice it swaying in the breeze!

The first question of course is "What's the big deal with 43 foot vertical monopoles?" Why this length over the previous flavour-of-the-year of a 33 foot vertical? In a nutshell, 33 feet works great for 40 to 17 meters, with the exception of 15 and 10 meters where the main lobe is not at all optimal for low angle radiation. At 40 meters you can directly connect coax to a 33 foot vertical antenna, but that's only on 40. You need a tuner on the antenna for all the other bands anyway, so what's the point.

The 43 foot length is optimum for low angle radiation on 20 and also works well on 80, 60, and 40 meters with proper loading and matching – it needs a matching device (tuner) in line anyway, so a bit less convenient than the 33 foot length was for 40. On 40 metres, the difference isn't great, as shown in this picture. Comparison of elevation patterns of a 43 foot (blue) and a 33 foot (red) vertical on 40 metres. The elevation peak is about 2° lower, and the gain is just a bit higher. Overall, the 43 foot monopole provides better performance on all bands from 20 through 160 metres.



While admiring the installation and reading the specs, I noticed it said "An optimized balun design allows direct coax feed with a negligible coax loss of typically less than ½db from 60 to 6 metres and less than 1db 160 & 80 – with a good quality low loss coax."

Of course we all know that loss – coax loss—is a function of quality, length and frequency. The higher the frequency, the more loss [stated in db per 100 feet]. BUT....most Hams don't understand that loss is also a function of Standing Wave Ratio [and the complex issue of antenna radiation resistance] and doesn't take into account losses in your balun. So with that being said, any loss figures and/or claims of gains have to be taken with a grain of salt. I would even go as far as saying they are meaningless.

We can make an educated guess however. The monopole vertical is a simple 43-foot long vertical and when we opened up the box at the base; it employs a 4:1 balun between the antenna and the antenna element. Since the antenna is fed from the base, I can assume we'd measure a high Impedance. For ease of my example it would not be unreasonable to guess at around 2000 Ohms Z. If we fed it directly with 50Ω coax, we'd see [2000/50] or 40:1 SWR. The 4:1 balun reduces this to 2000/200 or 10:1 – well within an auto-tuners' range to handle.

The instructions state that one should use "good quality, low-loss coax." Rick had some Belden 9913 coax, which in most circles meets the description. On the 6-meter band, it has a mere 1db loss per 100 feet. That is with a 1:1 SWR. However, we have a 10:1 SWR. So we brought out the ARRL handbook and found the chart showing increased loss with SWR. In this case, the increased loss is 1.7db for a total loss of 2.7db per 100 feet. MFJ/Hy-Gain's spec said 1db typical loss....makes you want to say hummmm.....If we divide 100 feet by 2.7 that gives us a 37 foot length of cable equalling the 1db loss. Could you install your vertical with only 37 feet of cable?

As we thought about Wavelength vs. Frequency and the vertical's length, we came to the conclusion that on 160 metres the vertical is about a $1/10^{th}$ of a wavelength giving it a radiation resistance of about 3 ohms. We chuckled at the suggestion you only needed ONE ground radial! This would result in about 40 ohms of ground resistance and the antenna's efficiency would be terrible! In this example, if you divide the radiation resistance by the total resistance – 3 ohms ÷ 43 ohms, you get almost 7% efficiency. That means for 100 watts input; only 7 watts of RF radiation leaves the antenna....that's the pits on 160 metres... It would be marginally better on 80 metres. So let's just say that QRP operation would be an exercise in frustration with this antenna – you need "power" on these lower frequency bands.

Twelve radials would be a whole lot better. The ground resistance would be about 10 ohms, so the antenna's efficiency would be 3Ω÷13Ω or 23% efficient. Meaning for 100 watts input, 23 watts of RF energy gets to escape from the vertical – that's 5db better performance with the extra 11 radials....Still not great, but as good as you're going to get, unless you're willing to bury a LOT more ground radials....

As for the cable loss, the 9913 has 0.2db loss on 160 metres. With just one radial, we have almost a 1:1 SWR, so with our 37 feet of cable we'll see 0.07db loss – negligible. With 12 radials, the SWR went up to 50/13 or about 3.8:1. The chart indicates cable loss at that SWR at about 0.15db. The antenna's specs states that it is less than ½ db. But actually it is a lot less. So it was easy to conclude the numbers in the documentation were totally meaningless!

We noted that when antenna efficiency went up, the cable SWR got worse. This is typical of grounded verticals and a good lesson: Higher SWR is not always bad. Let me explain before some of you start sending me nasty e-mails....

Let's suppose the vertical has 3 ohms radiation resistance and that we have a very poor ground system with 47 ohms of resistance [like a single ground radial]. Total resistance is 50 ohms and we have a perfect match of 1:1 SWR. The antenna efficiency would be 3÷50 or 6%. 6 watts radiated for 100 watts output.

Now bury 120 radials like the big broadcast stations do....Ground resistance is now less than 1/2 of an ohm. The total resistance is 3.5Ω and our efficiency is 3/3.5 or 86% -- 86 watts of radiated energy for 100 watts output. This is an improvement of 11.5db – much, much better! However, our SWR is 50/3.5 or 14:1. With our 37 feet of 9913 cable, we see a cable loss of 0.5db at 14:1. Subtract this and it's still an improvement of 11db. Higher SWR is not always bad! Besides, your tuner will handle this – tricking your transmitter into seeing a near-perfect load. You can't trust your SWR meter in high SWR situations anyway...and it's cable length dependant too...only direct [wavelength] multiples of the frequency measured will yield accurate readings....

If you want to use the antenna for 160 & 80 alone, just add about 50 feet of wire – strung horizontally – from the top of the vertical. This will raise the radiation resistance the thus the efficiency. But then again, it wouldn't be stealthy then...and you'd lose the ability to telescope it down for improved operation on the higher frequency bands.

So just lay down at least a dozen ¼ wave radials [at the lowest frequency you intend to operate] and you will get out on 160 and 80. Some would suggest at least 3 radials cut for 12, 17 and 60 wouldn't hurt either, as well as 3-4 for each band from 6 down to 160....oh wait! Isn't that close to the ideal 120 radials?! ☺

These verticals also work extremely well in the snow....can you guess why? Until the radiating element touches the blanket of snow on your lawn.... ☺